ABSTRACT

A transmitter codes data to be transferred, performs serial-parallel conversion of the data to two signal groups, and passes one of the groups to a first transmission unit and the other one to a second transmission unit. Each of the first transmission unit and the second transmission unit performs a prephasing process on each of signals included in the input signal group received, performs inverse Fourier transform thereon, and transmits the signal with a predetermined polarization. The polarity of the predetermined polarization of the first transmission is orthogonal to a polarity of the predetermined polarization of the second transmission unit. A receiver receives a signal transmitted from the transmitter with a predetermined polarization, performs Fourier transform thereon, performs MLD (Maximum Likelihood Detector) detection thereof, performs parallel-serial conversion in a parallel-serial converting unit, and decodes a signal originating from the parallel-serial conversion to output the transferred signal. The transmitter performs the prephasing process on each of the signals based on feedback information sent from the receiver in such a way that a probability that a same phase is generated becomes lower.